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ABSTRACT

The paper examines the application of educational technology to special education in East Asia and specifically in Japan, the Republic of China on Taiwan, Singapore, Hong Kong, and the People's Republic of China. The potential role of the microcomputer in special education is stressed and American applications of the microcomputer as a special education management tool, as a communication tool, as an instructional tool, and as a personal aid are briefly described. Current and future trends in the use of educational technology in special education in the East Asia are discussed in the context of: (1) official definitions of "exceptional"; (2) the political and economic structure; (3) social and cultural attitudes toward handicapped people; and (4) the influence of special education professionals. Considered next are current applications of educational technology in regular and special education in East Asia which, though still rather minimal, are expected to increase rapidly in response to commitment to building technology-based industries. (DB)

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Computer Technology Applications in Special Education in East Asian Nations

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Introduction

The goal of this study is to explore the application of technology in special education in East Asia. There are three purposes of this present research: a). to introduce uses of educational technologies in special education; b). to inspect conditions in East Asian nations that likely influence the adaptation c). to predict the future technological development in special education.

The targeted nations and areas to be discussed are; first, Japan, one the most technologically advanced countries in the world. Next are three of the Asia's Four Little Dragons: the Republic of China on Taiwan, Singapore, Hong Kong. (The fourth Little Dragon, South Korea, is not included here). The fifth is the People's Republic of China, one of the largest countries on earth. These nations will be analyzed according to either their leading position, representativeness, or potentiality in the current or

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future development of educational technologies in special education.

For purposes of the present study, educational technology is broadly defined as "a complex, integrated process involving people, procedures, ideas, devices, and organization, for analyzing problems and devising, implementing, evaluating, and managing solution, to those problems, involved in all aspects of learning" (Silber, 1981:21). Among the alternative instructional media, the focus of this paper will be the microcomputer, which has been referred to as a revolutionary innovation with promise for permanently affecting the scope and nature of education for all children (Papert, 1980). As a consequence, educators in advanced and developing nations are adding computer literacy to reading and writing literacy as a skill students will need for succeeding in the technological world where they will live and work in the future.

Microcomputer and Special Education

Special education and microcomputer applications share the common objective of catering to individual differences by providing effective and efficient instruction matched to the characteristics of learners (Semmel, Cosden, Semmel, and Keleman, 1984). It is

assumed that computer-assisted instruction will contribute to special education for two reasons: 1). Work with the handicapped is frequently labor intensive. The computer and its programs can be a great time and labor saving device for classroom teachers. 2). Certain types of handicapped persons would benefit substantially from such prosthetic devices as communication systems for severely involved cerebral palsied individuals (William, Thorkildsen, & Crossman, n.d.). However, applying computer technology to special education is a value judgement concerning the educational, financial, and political aspects of individual situations, because as James Rutherford of the American Association for the Advancement of Science commented that, "it is a major undertaking that must begin with adequate planning and funding of computer purchases and must extend through curriculum development and teacher training". Properly developed, microcomputer applications can overcome physical barriers, facilitate communication, compensate for physical and mental deficiencies, and serve as daily living prosthetic devices. Microcomputer technology holds the potential to dramatically expand the horizons of our exceptional students and represents the most revolutionary innovation yet developed in the field of

special education (Cain, 1983). In the present study, America's current development of computer technology in special education will be used as an example to identify problems and issues central to the use of microcomputers in schools. The American example may serve as a reference for the current or future technological applications of special education in the East Asian societies.

Applications of Microcomputers in Special Education--American Illustrations

America's special educators have been adopting computer technology to the problems of handicapped students for at least 15 years. It is estimated that approximately one million microcomputers are used in American elementary and secondary schools (Becker,1986) and 150,000 microcomputers currently being used in special education with 30,000 used for administration (Education Turnkey Systems,1983). It is also estimated that there will be over two million microcomputers in the schools by 1988, an average of 20 units per school (Elting & Raimondi, 1984).

Microcomputers have been designed to improve special education administration, assessment, instruction, related services, and staff development

(Bennett, 1982). These applications of microcomputers have been classified into four interrelated categories: a). a management tool for teachers and administrators, b). a communication tool for information exchange, c). an instructional tool for academic-learning enhancement, and d). a personal aid for individual handicapped students. The current applications of microcomputers in special education concerning the above four categories can be summarized as follows:

Microcomputer as a Management Tool

Activities or tasks performed in a school system, in a sense, are related to the general school administration. An efficient and accurate information system is important for special educators and administrators to establish and maintain large amounts of information available and to use them effectively. The computer-managed program has the increasing ability to store data such as administrational personnel information, budget analysis, student record keeping, instructional planning, referral evaluation, and Individual Educational Program (IEP) annual reviews. Furthermore, it is possible to develop an integrated information management system which facilitates the collection of data and the access of information across all levels of school organization. One of the

advantages of using the computer administratively in schools is that each administrator can have immediate electronic access to a large quantity of files of data and can retrieve them in the form which he or she needs at the moment.

Microcomputer as a Communication Tool

Microcomputers can be very powerful communication tools for connecting educators with one another and for searching information resources. This can be accomplished simply by equipping a microcomputer with a modem (telephone connector) and linking through the telephone lines. Such a telecommunication system may link state agencies and school districts through local or statewide networks for data transmission, information exchange, and training. Special educators are in a leading position for adopting wide-area networks such as SpecialNet to communicate with colleagues across the country. The combined power of the personal computer and electronic communications networks offers special educators a great opportunity both to improve instruction for exceptional students and to expand the flow of information about exceptional individuals to anyone needing such information. Such networks eventually may link schools to homes and other community agencies.

Microcomputer as an Instructional Tool

Computer technology provides for a richest and highly individualized interaction between student and curriculum. Computer-assisted instruction can be tailored to suit individual students' needs. For example, the students can control the pace of learning, they can receive immediate feedback and reinforcement from the computer, and they can repeat the same program over and over again. Furthermore, the student may avoid the frustration of social embarrassment, because the computer program can be designed as nonthreatening and nonjudgmental. Seven types of programs are popular for educational uses. They are drill & practice, tutorial, word processing, programming, problem solving, instructional games, and simulation. In the United States there has been widespread adoption of microcomputer technology in special education. According to a recent survey conducted by Project TEECh of the Special Education program at University of California, Santa Barbara, the type of most frequently used software by teachers focuses on drill and practice (96%). Next are games (60%), computer use (60%), tutorial (43%), and programming (41%).

Microcomputer as a Personal Aid

Microcomputer technology with its related

electronic appliances have dramatic impacts on the lives of handicapped population. Some of the developed microcomputer devices such as oversized keyboards, braille printers, touch panel screens, and voice entry and speech synthesizers have already been used in special education with severely handicapped students. Assistive devices, for example, headwands, eyebrow switches or sucking devices allow physically handicapped students to use the microcomputer for learning, communication, and mobility. Units such as Super Phone permit the deaf and hard of hearing to "talk" with the hearing world from their home telephones. Braille keyboards and printers allow the blind and visually impaired access to computer technology and its related communication network systems. Electronic microcomputer scanners with speech synthesizers permit handicapped people to read any print material which is available to the general population. Voice activated computer systems connected to a switching box allow the physically handicapped to control electric appliances in their homes.

Promises and Pitfalls

Some of the obstacles to effective use of microcomputers in America's education have been

outlined in the House Subcommittee on Science, Research and Technology 1984. They are 1) Computer hardware is not yet widely available in the schools and what equipment is available is not equitably distributed; 2) Teachers are not being adequately trained in how to use computers and plan for their integration into standard coursework; and 3) High-quality educational software is almost non-existent in the primary and secondary schools.

If the foregoing applications are the varied uses for microcomputers in American special education programs, which of the application might then be profitably adopted in our five East Asian nations? This issue is what we next consider. The mode of analysis consists of describing: a. the definitions of "exceptional"; b. the political and economic structure; c. social and cultural attitudes toward handicapped people; and d. the influence of special education professionals. These four categories have great impact on the current and future trends of educational technology in special education in these Eastern Asian societies.

A. Official Definitions of "Exceptional"

The value of special education is to execute the philosophy that all children, regardless of any exceptional condition or handicap, are believed to deserve equal educational rights and are expected to bear the social responsibilities when they grow up. However, societies differ in the way they interpret "exceptional" and "equal educational rights for exceptional people." Therefore, the individuals who deserve the educational rights intended for the exceptional and the personal characteristics that qualify individuals as exceptional in a culture influence the current and future applications of educational technology in special education. In way of illustration, consider the cases of the five East Asian societies.

In 1970, Japanese law (#84) indicated that people who qualify as exceptional were the physically handicapped; visually impaired; hard of hearing; orthopedically impaired; handicapped in speech and language; or in heart disease, asthma, or other organic impairments; or mentally retarded.

The Special Education Law of the Republic of China published in 1977 specified the people who deserved special education and services as the gifted, visually impaired, hearing handicapped, handicapped in

speech & language, physically handicapped, impaired in health, emotionally disturbed, and learning disabled.

At the beginning of the 1980s, the four types of personal handicap mentioned in China's Encyclpedia of Education as warranting special education were those of blindness, deafness, marked mental retardation, and antisocial deviance ("Special Education", 1981-82, pp. 49-52). It was estimated that in 1985 there were half-a-million school-age children suffering such visual, auditory, and mental handicaps, which would represent perhaps 2-tenths of one percent of the country's school-age population (Xu, 1985).

If we assume that Hong Kong, as a British crown colony, seeks to match educational standards that obtain in England, then we can use British policy as a guide to policies expected in Hong Kong. According to the British 1981 Education Act,the handicapped included: children with learning difficulties (severe), children with learning difficulties (mild),the blind, partially sighted, deaf, partially hearing, epileptic, maladjusted, disruptive, physically handicapped, speech defective, delicate, dyslexic, and autistic. Additional suggested categories included: neuropathic child, inconsequential child, psychiatrically crippled child, aphasic child, and others.

According to a 1972 report, special education in Singapore served the children who were educationally sub-normal, blind, partially sighted, deaf, partially hearing, physically handicapped, delicate,suffering from leprosy patients, and epilepsy and those with speech defects.

It is apparent that these countries generally identify "exceptional" as people with moderate or severe mental or physical disabilities. As we refer to the application of microcomputers, we can assume that, concerning the nature of the handicapped, the current development of microcomputers as personal aids should be most appropriate for these societies to provide in their special education services. For example, braille keyboards and printers for the blind and visually impaired, electronic microcomputer scanners with speech synthesizers for handicapped with speech problems, headwands, eyebrow switches or sucking devices for physically handicapped, are some devices for the handicapped to use microcomputer for learning, communication, and mobility. However, we need to consider the following crucial factors to the development of special education before making further predictions.

B. Political and Economic Structure

The political and economic conditions of a society influence the provision for educating the exceptional. In a competitive society, "people do not value high intelligence as such unless it leads to socially approved achievements" (Sarason & Doris, 1979). In the present study, we review the policy of special education and implementation of the policy in each society, because there often is a discrepancy between educational regulations and actual practice. Policy statements can be viewed as the society's --or at least the government leaders'-- stated intentions or ideals. Implementation provisions reflect the ability or willingness of the society to put policies into practice (Thomas, 1987). We will also describe the current economy of our five nations and area, because financial constraints definitely limit the viability of developing nations to fund their educational programs, especially special education.

B.1 Political Environment of Special Education

It is a common case that most societies give first priority to offering new educational technology to the more average majority of learners and only later may attend to the needs of the exceptional minority. Nevertheless, we should keep in mind that the

governments of our five Eastern Asian societies are today more active in implementing the educational rights for the handicapped than they were earlier. For example, education for the handicapped children in most of the nations was provided in the past by religious as well as secular private organizations. Along with the high rate of economic growth and the success of mandatory regular education, these governments are able to provide funding and resources for special education and related services.

Hong Kong. Until recently, the special services for children with a moderate or severe mental handicap were given training in centers operated by the Social Welfare Department of Hong Kong. However, the Director of Education has started a phased take-over of responsibility to provide education for these children since April 1979. The 1977 White Paper on Rehabilitation is the guideline for the development of the provision of special education. In March 1985, a total of 19,092 places for handicapped children in special schools and in special classes in ordinary schools were provided. There were 69 aided special school, financed by the Government under the Code of Aid for Special Schools, provided education for the blind, the deaf, the physically handicapped, the

mentally handicapped, and the maladjusted and socially deprived.

Japan. Japan's Fundamental Education Law of 1947 stated that, "The people shall all be given equal opportunities of receiving education according to their ability, and they shall not be subject to educational discrimination on account of race, creed, sex, social status, economic position, or family origin. The state and local public bodies shall take measures to give financial assistance to those who have, in spite of their ability, difficulty in receiving education for economic reasons." The 1970 Fundamental Law for Handicapped People indicated that the government as well as the local public organizations were responsible for the welfare of the handicapped people, such as the prevention, medication, training, protection, education, employment, and retirement of the handicapped. However, it was until the establishment of compulsory special education schools in 1979, which mandated that any handicapped child, irrespective of the degree of his or her disability, should receive education. Thus, the equal educational rights of the handicapped were protected.

People's Republic of China. It is estimated that there are 20 million handicapped people in mainland China

(China Daily, 1985). However, until the mid-1980's, the fundamental education law in People's Republic of China provided no special rights or facilities for the handicapped. It is said that authorities were considering adding special-education provisions in the revision of the national education law that was being contemplated in 1985. China has also planned to conduct a national survey in April 1987 on the status and number of handicapped people in China. The result is expected to form the basis for improving welfare work for the handicapped. Deng Fufang, Director-in-chief of the China Welfare Fund for the Handicapped, said that a special law to protect the rights of the handicapped Chinese is expected to be adopted in 1988 along with standards for removing architectural barriers to the handicapped (China Daily, 1986.)

Republic of China on Taiwan. The Republic has been dedicated to the improvement of legislation concerning the handicapped. The 1970 Special Education Rules indicated nine different types of exceptional people who should receive special education and required local education authorities to provide special instruction for the handicapped. The 1974 Classification of Exceptional Children and Assistance for Education

announced the standard for identifying hearing impairment, visual impairment, mental retardation, and physical handicap. Therefore, the current development of special education still emphasizes these four areas; only a few schools were chosen to practice special instruction with the rest of the five handicapped areas. In the 1975 Special Education Teacher Certification, local education authorities were assigned to employ the special education teachers. The 1984 Special Education Law was the complete legislation focusing on the handicapped and the gifted and covered the special services from preschool, 9-year compulsory education, to the senior high school or above.

Singapore. In 1985, the Singapore government granted $1.3 million dollars to the Institute of Education for improving educational computer facilities (personal correspondence, Dr. D. Harper, May, 16, 1986.)

B.2 Economic Influences on the Adoption of Microcomputers for Special Education

Four of our five East Asian societies, except mainland China, have limited natural resources. However, according to a recent World Bank survey, East Asian nations have now joined the ranks of the most affluent societies in the world: Japan's per-capita

income is over $10,000; Singapore and Hong Kong, being city-states, have risen to more than $6,000; and Taiwan has surpassed $3,000. Their rapid economic growth us owed mainly to the considerable expansion of foreign trade. Most of all, they are among the strongest competitors in computer manufacture. For example, Taiwan exported 100,000 computers to more than 40 countries in 1985. As the world's 15th largest exporter in 1984, the electronics industry is the second largest export-earner in Hong Kong. Some of the world famous computer companies, such as IBM, Apple, and Hewlett-Packard, have established their overseas manufacturing factories and markets in these nations. The industrial manufacturing sectors of these countries absorb most of the labor force. What, then, are the implications of these economic phenomena for the development of microcomputer technology in special education?

The economy is always regarded as a productive artery of a nation, whose flow can almost predict the accomplishment of other national activities. A poor country which tries to eliminate its foreign debts obviously may encounter more difficulties in establishing an educational computer system in schools, such as in the availability of financial resources and

trained personnel. On the other hand, with economic strength and with the ability to build computer systems, four of the five East-Asian societies appear to have already solved the fundamental problems of finance and the potential for training personnel in developing microcomputer technology in special education. Thus, from the standpoint of economic viability, Hong Kong, Japan, Singapore, and Taiwan appear able to teach handicapped students with computer assisted instruction.

Although mainland China is mainly an agricultural society with per-capita income about $250 dollars, her rich natural resources and 1 billion hard-working people are the potential powers for any future development in education. Mainland China accounts for 22% of the world's production of cereals, almost 40% of the world's pork production, and 38% of the world's rice production (1986 World Bank Survey). On the other hand, the electronic sector is growing in importance and has moved into areas of high technology, such as microelectronics, satellite communications and computer technology. The communist government considers certain degrees of liberal reforms to "introduce capitalist-style market forces and to reduce central governmental control, with increased incentives for

workers and a new system of taxes" hoping that the success of economic reforms can be transferred to industry (1986 World Bank Survey). Therefore, the rapid growth in economic modernization implies the possibility of developing microcomputer applications in special education.

C. Social & Cultural Attitude toward Handicaps

A further important condition affecting the adaptation of a technology is the attitude of the populace toward educational innovation. In the case of our five societies, the people are apparently very concerned about educational progress; and "The populations of the Little Dragons are among the best educated in the world" (David Reed, 1986). Traditionally, the success in education was the way of achieving fortune and fame. Except mainland China, the other four societies have continuously had very competitive school-entrance examinations--secondary school and college entrance examinations in Japan and Taiwan, the Cambridge General Certificate of Education "O" and "A" Level Examinations in Singapore and Hong Kong. And under the present mainland-Chinese government, strict examinations have been reinstituted. Therefore, those who succeeded the examinations were

regarded as with promising future. Handicapped people, then, were in another category. As is true worldwide, government authorities postpone the special provisions for exceptional individuals until the nonexceptional have been served. Concerning the issues of conscience and equality, most of the general populace will consider the further development of special education as a matter of public conscience. A commonsense Chinese philosophy toward the handicapped is that "shelters shall be provided for all of the handicapped as well as for the ill to live in." The handicapped are rather seen as a "financial" liability to the society, instead of simply a less productive segment of the populace.

Concerning the priority of having access to educational technology, from the viewpoint of education as a national investment, the nonhandicapped majority will definitely propose that they are the labor force supporting the society's economic growth. Therefore, the nonhandicapped majority expect and receive priority in access to and training for new educational facilities. As further evidence that the need for special education has not been viewed as critical, a delegation of American educators who visited China in 1977 discovered that the people they talked with felt

that "mental retardation affects so few persons that it was not considered a problem in China" (Robinson, 1978 pp.195-196).

D. The Influence of Special Education Professionals

"Professional" here means, first, scholars with special-education training who claim expertise in the area. Second, it means people with political connection who contribute to special services. These professionals, especially scholars, control admission to their ranks, publicize the importance of their services, and seek legislation which extends their services to a larger clientele and which improves their own financial condition. Within a society, the status of professionals in the field of special education influences the way the exceptional are defined and the provisions furnished for educating the handicapped. Professionals not only sympathize with the plight of the exceptional but also seek to protect and enhance their own group's favored position in the society (Thomas, 1987).

A vivid example of the tremendous influence from the professionals, viz. political figures, can recently be seen in the case of mainland China. In the past, the proportion of professionals dedicated to special

education was infinitesimal. Special education and services provided to the handicapped was, then, relatively received little concern by the government. However, recently several significant political figures who themselves suffer handicaps have dedicated to improve and attract attention to rights for the disabled. For example, Deng Fufang, the wheelchair-bound son of China's 82-year-old leader Deng Xiaoping, suffered physical injury during the nation's Cultural Revolution. Through the influence of Deng Fufang and Wang Lu-Guang, the China Welfare Fund for the Handicapped was established in 1984. Following its creation, more apparent efforts to generate both official and popular support for expanding special education have been exerted, and they recently founded the National Research Association for Special Education (Xu, 1985).

In the case of the other four societies, due to the increased attention from the governments, special education and services have generally attracted more involvement from different types of professionals, such as physicians, educational psychologists, psychiatrists, opticians, psychometricians, speech and hearing specialists, school administrators, social workers, probation officers, health visitors, reading

specialists, classroom techers, and others who regarded the diagnosis and treatment of exceptional people as their province. At the same time, some international associations, such as the Asian Federation for the Mentally Retarded, which is an Asian-based international organization for the welfare of the handicapped people, are greatly influencing these Asian governments in implementing the rights of the handicapped people.

After analyzing the above interrelated factors which may determine the innovation of educational technology with handicapped students, we can better understand the current development of educational technologies in these five Asian societies.

Current Applications of Educational Technology in Education & Special Education

Traditional printed materials, such as text books, and paper-pencil drill and practice are the dominant educational technologies in the schools. The application of educational media--projectors, films, audio & video tapes, radio, or television have also been adopted and are increasingly popular in the five Asian societies. Nevertheless, the degree of implementation and the users of these media in

education vary in each nation. Most such advanced technologies were used in teaching reinforcement. Let us take educational television as an example. Both the People's Republic of China and the Republic of China on Taiwan employ radio and television broadcasting for informal education equivalent to regular higher education. From July 1 1986 a communication satellite began to assist the television broadcasting universities in People's Republic of China for in-service training of primary-school teachers through out the country (Shiqi, 1986). On the other hand, Hong Kong has provided Education Television (ETV) Service for students of primary schools (since 1971) and secondary schools (since 1976).

Along with the increasing attention to the welfare of handicapped people, the technology environments of special education are in transition toward more higher technology-oriented ones in these societies. Achievement on improving the aids for visual and hearing impairments are more apparent than those for the mentally retarded, due to 1). these physical deficits were the relatively "traditional" emphasis of special education; 2). physical defects were considered more amendable to solution than are problems of intelligence problem; and 3). people with

visual or hearing problems were thought to be more "productive" than the mentally retarded in the society. Let us use Hong Kong and People's Republic as examples. According to Hong Kong's Educational Department's Annual Summary 1984-1985, an earmould laboratory, established in June 1983, provided free custom-made earmoulds and hearing aids to needy children. Mainland China claimed a "breakthrough" of a new braille system, which will enable the blind people to "meet the demands of the country's modernization drive" (Hu, 1986). Nevertheless, these societies have also worked for up-dating the educational facilities for the other classified handicapped students, especially after the introduction of electronic computers.

The development of microcomputers in education is still in its infancy for our five Asian societies. In Japan, for example, fewer than 0.1 percent of the elementary secondary schools has access to microcomputers (APEID, 1985). However, rapid developments of computer education are predicted owing to the fact that these five Asian societies are very anxious to build up or strengthen their higher technology based industries to keep up their economic growth. Therefore, the preparation for trained personnel and a capable workforce to acquire the

necessary skills, viz. the use of computers, can be expected on education plans. Generally speaking, some common phenomena of introducing microcomputers into education can be seen among these societies:

First, computer education was incorporated through extracurricular activities. Second, students in secondary schools get priority to work with microcomputers, then opportunities are opened up for elementary students. In Singapore, about 8 percent of the secondary school population have learned the use of microcomputer through 134 school Computer Appreciation Clubs (APEID,1985). The National Experimental Centre for Computer Education in Secondary Schools was established in People's Republic of China in 1983. Five pilot secondary schools were chosen to set up an experimental programme of microcomputer education.

Third, higher educational organizations, such as universities, research institutes, share the responsibility of improving the technology facilities for the handicapped populace. In Japan, for example, one system now in operation is a "Practical Environmental System" for mentally retarded children which has been developed by the Ibaragi University Faculty of Education (APEID, 1985). On the other hand, the opportunities of the handicapped students for

direct access to microcomputers are still relatively rare in these nations.

Fourth, most of the societies predict a rapid diffusion of microcomputers into their school systems. Research fundings were also provided to research institutions in Japan and Singapore for investigating the applications of microcomputers in special education. Nevertheless, the non-handicapped majority apparently receive the priority of using microcomputers.

Future Development of Educational Technology in Special Education: Predictions and Suggestions

Referring to the current applications of microcomputer in American special education, microcomputers can be used in school management, communication, teaching, and as personal aids. Due to political and socio-economic reasons, establishing microcomputer systems in school administration will receive less opposition than will introducing microcomputers in special education. The research in improving or creating personal aids for handicapped people will also attract public interest, since scientific inventions can help promote a nation's international reputation. However, the pace of

implementing microcomputerized personal aids for the needed people may not be compatible with the national interests.

Continuous efforts on innovating higher educational technology and computers with handicapped students can be predicted in these societies. However, unless the values of the handicapped people are recognized by the majority and the attitudes of the government toward special education become more active and positive, the educational opportunities of the handicapped students will always be inferior to opportunities for the regular students. The fundamental problem is the widespread conception about the employability of the disabled; they continue to be regarded as a social liability. Handicapped people, especially the mentally retarded are generally believed to be 1). unable to work, except possibly in a suitable workshop environment, 2). relatively unproductive, and 3). so limited intellectually that they are unable to fine suitable work. (Elder, Conley, & Noble, 1986). On the other hand, the economic structures of these societies are in rapid transition. The development of higher technological industries provide jobs which require simple motion or eye-hand coordination. It is almost certain that after longer periods of training

and more frequent supervision, at least certain disabled people will be able to handle the same job requirement, such as electronic assembly or computer-controlled activities. Therefore, the simple motion activities which lead to the relatively higher economic productivity may be considered by these nations as another approach in helping the handicapped of being at least capable of or even better than the normal people.

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